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CLAIMS

1. A metal polishing composition used for polishing a metal layer, comprising a film forming compound which polymerizes
5 on a surface of the metal layer, forming a polymer film on the surface of the metal layer.

2. The metal polishing composition according to claim 1, wherein the film forming compound polymerizes under catalysis
10 from one or more materials selected from a group consisting of a metal included in the metal layer, oxides of the metal, and ions of the metal.

3. The metal polishing composition according to claim 1,
15 wherein the film forming compound is at least one compound selected from a group consisting of phenol compounds and aromatic diamine compounds.

4. The metal polishing composition according to claim 3,
20 wherein the phenol compound comprises at least two phenolic hydroxyl groups.

5. The metal polishing composition according to claim 4, wherein the phenol compound comprising at least two phenolic
25 hydroxyl groups is at least one compound selected from a group consisting of catechol, pyrogallol, gallic acid, tannic acid, and polyphenols.

6. The metal polishing composition according to claim 5,
30 wherein the polyphenol is a tannin.

7. The metal polishing composition according to claim 1, further comprising an oxidizing agent, and wherein said polymerization is an oxidation polymerization.

8. The metal polishing composition according to claim 3,
wherein the oxidizing agent is at least one compound selected
from a group consisting of oxygen, ozone, hydrogen peroxide,
5 and ammonium persulfate.

9. The metal polishing composition according to claim 1,
further comprising an organic acid and/or an amino acid.

10 10. The metal polishing composition according to claim 9,
wherein the organic acid is at least one compound selected
from a group consisting of acetic acid, lactic acid, malic
acid, citric acid, tartaric acid, glycolic acid, oxalic acid,
and phthalic acid.

15 11. The metal polishing composition according to claim 1,
further comprising a complex forming compound, which reacts
with the metal included in the metal layer, an oxide of the
metal, or an ion of the metal, and forms an insoluble complex.

20 12. The metal polishing composition according to claim 11,
wherein the complex forming compound is an azole.

13. The metal polishing composition according claim 12,
25 wherein the azole is benzotriazole.

14. The metal polishing composition according to claim 1,
further comprising abrasive grains.

30 15. The metal polishing composition according to claim 14,
wherein the abrasive grains utilize at least one compound
selected from a group consisting of silica, alumina, ceria,
and organic abrasive grains.

16. The metal polishing composition according to claim 1, used for polishing a metal layer which is formed on a top of a wafer which contains recesses so as to fill and cover the recesses.

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17. The metal polishing composition according to claim 16, wherein a barrier metal layer is formed on a top of the wafer which contains recesses.

10 18. The metal polishing composition according to claim 1, wherein the metal included in the metal layer is either copper or an alloy comprising copper.

15 19. The metal polishing composition according to claim 17, wherein the barrier metal layer is formed from a tantalum based metal.

20 20. A polishing method for a metal layer, comprising a step of polishing and planarizing the metal layer using the metal polishing composition according to any one of claims 1 to 19.

25 21. A production method for a wafer, comprising a step in which the polishing method for a metal layer according to claim 20 is used for polishing and planarizing a metal layer, which is formed on top of a wafer which contains recesses so as to fill and cover the recesses.